CLAIMS

I claim:

1. A continuous combustion reaction engine devoid of internal moving parts, comprising:

a forwardly disposed air inlet section, having a forward end and a rearward end opposite said forward end;

a centrally disposed fuel injection section;

a rearwardly disposed, annular combustion section;

a large diameter, concentrically disposed exhaust gas recirculation duct, extending forwardly from said combustion section through said fuel injection section to said air inlet section;

said exhaust gas recirculation duct having an open rearward end communicating with said combustion section, and a forward end opposite said rearward end;

a plurality of radially disposed pressure generators within said air inlet section, defining a corresponding plurality of air inlet passages therebetween;

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each of said pressure generators having an inner end, an outer end opposite said inner end, a forwardly disposed, open air inlet side, a rearwardly disposed airflow passage therethrough communicating with said air inlet side, and a plurality of airflow guide louvers disposed within said air inlet side;

said exhaust gas recirculation duct further having a plurality of radially disposed exhaust gas passages adjacent said forward end thereof, each communicating with a corresponding said airflow passage of one of said pressure generators;

an annular airflow passage surrounding said air inlet section and extending rearwardly to said fuel injection section;

each said airflow passage of said pressure generators further having an outer end communicating with said annular airflow passage; and

a plurality of air entrainment venturis disposed in an annular array about and forwardly adjacent said rearward end of said exhaust gas recirculation duct.

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2. The engine according to claim 1, further including:

at least one fuel pump;

an electrically powered fuel pump drive motor, operating said at least one fuel pump during starting operations;

an engine exhaust powered fuel pump drive turbine, operating said at least one fuel pump during operation after starting; and

an exhaust duct extending from said exhaust gas recirculation duct to said engine exhaust powered fuel pump drive turbine.

3. The engine according to claim 1, further including:

a starting fuel injector disposed forwardly of each of said air entrainment venturis;

an outlet nozzle extending from each said injector, and aligned axially with airflow through the corresponding one of said air entrainment venturis;

a run fuel injector disposed generally rearwardly of each of said air entrainment venturis; and

a fuel deflector disposed rearwardly of and aligned with at least said outlet nozzle of each said starting fuel injector.

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4. The engine according to claim 1, wherein said pressure generators are disposed in a plurality of stages extending from the forward end to the rearward end of said inlet section.

5. The engine according to claim 1, wherein:

said air inlet section, said fuel injection section, said combustion section, and said exhaust gas recirculation duct are concentrically disposed about a longitudinal axis; and

said pressure generators are swept at an angle other than normal to said longitudinal axis.

6. The engine according to claim 1, wherein said air inlet section, said fuel injection section, said combustion section, and said exhaust gas recirculation duct have other than a circular cross-sectional shape.

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7. A continuous combustion reaction engine devoid of internal moving parts, comprising:

a forwardly disposed air inlet section, having a forward end and a rearward end opposite said forward end;

a centrally disposed fuel injection section;

a rearwardly disposed, annular combustion section;

a large diameter, concentrically disposed exhaust gas recirculation duct, extending forwardly from said combustion section through said fuel injection section to said air inlet section;

said exhaust gas recirculation duct having an open rearward end communicating with said combustion section, and a forward end opposite said rearward end;

a plurality of radially disposed pressure generators within said air inlet section, defining a corresponding plurality of air inlet passages therebetween;

each of said pressure generators having an inner end, an outer end opposite said inner end, a forwardly disposed, open air inlet side, a rearwardly disposed airflow passage therethrough communicating with said air inlet side, and a plurality of airflow guide louvers disposed within said air inlet side;

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said exhaust gas recirculation duct further having a plurality of radially disposed exhaust gas passages adjacent said forward end thereof, each communicating with a corresponding said airflow passage of one of said pressure generators;

an annular airflow passage surrounding said air inlet section and extending rearwardly to said fuel injection section;

each said airflow passage of said pressure generators further having an outer end communicating with said annular airflow passage;

at least one fuel pump;

an electrically powered fuel pump drive motor, operating said at least one fuel pump during starting operations;

an engine exhaust powered fuel pump drive turbine, operating said at least one fuel pump during operation after starting; and

an exhaust duct extending from said exhaust gas recirculation duct to said engine exhaust powered fuel pump drive turbine.

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8. The engine according to claim 7, further including a plurality of air entrainment venturis disposed in an annular array about and forwardly adjacent said rearward end of said exhaust gas recirculation duct.

9. The engine according to claim 7, further including:

a starting fuel injector disposed forwardly of each of said air entrainment venturis;

an outlet nozzle extending from each said injector, and aligned axially with airflow through the corresponding one of said air entrainment venturis;

a run fuel injector disposed generally rearwardly of each of said air entrainment venturis; and

a fuel deflector disposed rearwardly of and aligned with at least said outlet nozzle of each said starting fuel injector.

10. The engine according to claim 7, wherein said pressure generators are disposed in a plurality of stages extending from the forward end to the rearward end of said inlet section.

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11. The engine according to claim 7, wherein:

said air inlet section, said fuel injection section, said combustion section, and said exhaust gas recirculation duct are concentrically disposed about a longitudinal axis; and

said pressure generators are swept at an angle other than normal to said longitudinal axis.

12. The engine according to claim 7, wherein said air inlet section, said fuel injection section, said combustion section, and said exhaust gas recirculation duct have other than a circular cross-sectional shape.

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13. A continuous combustion reaction engine devoid of internal moving parts, comprising:

a forwardly disposed air inlet section, having a forward end and a rearward end opposite said forward end;

a centrally disposed fuel injection section;

a rearwardly disposed, annular combustion section;

a large diameter, concentrically disposed exhaust gas recirculation duct, extending forwardly from said combustion section through said fuel injection section to said air inlet section;

said exhaust gas recirculation duct having an open rearward end communicating with said combustion section, and a forward end opposite said rearward end;

a plurality of radially disposed pressure generators within said air inlet section, defining a corresponding plurality of air inlet passages therebetween;

each of said pressure generators having an inner end, an outer end opposite said inner end, a forwardly disposed, open air inlet side, a rearwardly disposed airflow passage therethrough communicating with said air inlet side, and a plurality of airflow guide louvers disposed within said air inlet side;

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said exhaust gas recirculation duct further having a plurality of radially disposed exhaust gas passages adjacent said forward end thereof, each communicating with a corresponding said airflow passage of one of said pressure generators;

an annular airflow passage surrounding said air inlet section and extending rearwardly to said fuel injection section;

each said airflow passage of said pressure generators further having an outer end communicating with said annular airflow passage;

a plurality of starting fuel injectors, each disposed forwardly of said combustion section;

an outlet nozzle extending from each of said injectors, and aligned axially with airflow;

a plurality of run fuel injectors, each disposed generally rearwardly of a corresponding one of said starting fuel injectors and forwardly of said combustion section; and

a fuel deflector disposed rearwardly of and aligned with at least each of said outlet nozzles of said starting fuel injectors.

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14. The engine according to claim 13, further including:

at least one fuel pump;

an electrically powered fuel pump drive motor, operating said at least one fuel pump during starting operations;

an engine exhaust powered fuel pump drive turbine, operating said at least one fuel pump during operation after starting; and

an exhaust duct extending from said exhaust gas recirculation duct to said engine exhaust powered fuel pump drive turbine.

15. The engine according to claim 13, further including:

a plurality of air entrainment venturis disposed in an annular array about and forwardly adjacent said rearward end of said exhaust gas recirculation duct, between said starting fuel injectors and said run fuel injectors.

16. The engine according to claim 13, wherein said pressure generators are disposed in a plurality of stages extending from the forward end to the rearward end of said inlet section.

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17. The engine according to claim 13, wherein:

said air inlet section, said fuel injection section, said combustion section, and said exhaust gas recirculation duct are concentrically disposed about a longitudinal axis; and

said pressure generators are swept at an angle other than normal to said longitudinal axis.

18. The engine according to claim 13, wherein said air inlet section, said fuel injection section, said combustion section, and said exhaust gas recirculation duct have other than a circular cross sectional shape.

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